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EDUCATIONAL NEWS AND EDITORIAL COMMENT

Editorial Announcement

The *Elementary School Teacher* will, beginning with the present number, conduct a department of educational news and editorial comment. This department takes the place of the editorial department as it has heretofore been carried on. The news notes will not aim to report personal matters, however interesting these may be, but will attempt to reflect in a large and general way the development of educational policies in different parts of the country. The editors invite the co-operation of friends of the Journal in securing information with regard to important educational movements. The present number will serve to illustrate the type of information which can be utilized in this department. Responsibility for the opinions which are expressed in the editorial comments should perhaps be placed very definitely so that there may be no commitment of all of the members of the faculty of the School of Education. Unless otherwise indicated, these editorial comments may be charged to the responsibility of the writer who signs this announcement.

CHARLES H. JUDD

Educational Politics Do Not Constitute Educational Leadership

The National Education Association held its summer meeting of 1912 in the city of Chicago. The attendance at the meeting was very large and many important papers were presented. The interest of members and of the people who read the newspapers was largely absorbed, however, in the political doings of this meeting. A candidate from New York City in presenting her claims made it perfectly obvious that negotiations had been carried

on prior to the meeting by a very compact organization of teachers in the city of Chicago, which organization finally refused its support to this candidate because of her unwillingness to favor certain constitutional amendments which were to be presented on the floor of the association. It is doubtful whether the ordinary member of the National Education Association cares enough about the constitutional amendments under discussion to view with complacency the tendencies which have grown up within the organization when a systematic trade in offices is privately projected and publicly discussed as an accepted means of directing the policy of the association. The Board of Directors spent much of its time during the meeting in listening to charges and countercharges. Secretary Shepard, who since the meeting has resigned from his office, presented recommendations in regard to voting members which very reasonably aimed to prevent the domination of any given meeting by merely temporary members. In support of this he read an elaborate report in which he charged mispractices at the Boston meeting which had been continued since that meeting to the present. These charges were met by countercharges. The whole impression made on the innocent mind of a non-combatant is that the association is suffering from a temporary lapse of equilibrium. One notes with some satisfaction the election to the office of president of a man who by his past record is certainly clear from any implications of mixing with these politics in the National Education Association. Superintendent E. T. Fairchild, of the state of Kansas, is a vigorous school man who in his own state has stood for the improvement of the common schools and has not been deflected from the straight path of his own best judgment by any political influence.

It is hoped that when the next meeting of the National Education Association gathers no candidate will be able to stand before the association and assert with any show of veracity that he has been in negotiation with any group of teachers who can either promote or defeat his candidacy for office on such grounds as were discussed this year. What the members of the association want is an aggressive educational organization, free from petty politics and factional disputes. What the association needs is leaders in

educational policy who will see to it that information is brought together which will benefit teachers, that co-operative influences are developed which will dignify and strengthen the teaching profession, that reports are prepared and acted upon which will improve American education. Let those who are interested chiefly in politics get out of the light.

Vacation Schools and All-Year Schools

At the end of the summer vacation one reads with much interest of the vacation schools which have been conducted by boards of education or organized through the co-operation of parents' associations and women's clubs. One reads of the special trade schools which have been in successful operation during the summer. For example, in Joliet, Ill., 200 boys were engaged in working daily at the Roosevelt School and held a very successful exhibition showing the chairs, benches, tables, and other pieces of furniture which they had made. In the same way at Lamoni, Iowa, a manual-training school was held during the summer and an exhibition was made at the Carlisle Building at the end of the summer's work. Like reports come from Columbus, Ohio, and many other cities and towns.

In New York, a novel feature of instruction was added in the summer schools when the children were given instruction in various safety devices, such as methods of getting on and off street cars, crossing the streets, etc.

In the Chicago vacation schools emphasis was laid upon sewing, cooking, physical education, housekeeping, and nature-study. Other examples could be found without end of this sort of activity all over the country during the summer vacation. Undoubtedly the ultimate result of this organization of vacation schools will be the extension of the school so that it will be in session throughout the year.

One characteristic item showing some of the difficulties in the way of such schools, which appeared in the *Indianapolis Star*, is a dispatch from Richmond, Ind. The dispatch in question says interviews obtained from the leading business men of Richmond show that the great majority of them are opposed to the plan

of State Superintendent Greathouse to organize a twelve months' term in the public schools of the state. "The principal objection that Richmond business men have to the new idea is the additional expense and the consequent raising of the tax rate." This type of objection is likely to interfere with vacation schools for some time, but if the advantages can be clearly set forth by those who have had experience in such schools, the financial difficulties will ultimately disappear.

Textbook Adoptions

A subject of very general discussion during the summer vacation in various sections of the country is the adoption of textbooks by states. In the state of Oklahoma, the governor was induced by his investigations of the State Board of Education to call for the resignation of a number of members of the board. When these resignations were not forthcoming, the governor removed a number of members from the board. Just at the time that the governor was taking this action, the board met and passed the contracts for books for the coming year. The question of the legal validity of their action will have to be settled in the courts. In the meantime the acute character of the situation concentrates attention once more upon the importance of the book-purchasing issue as a matter of school organization.

In Kansas the possibility of increasing the amount of money which may be expended on books is one of the leading issues in the school campaign. Kansas operates under the old-fashioned law which makes it impossible to adopt books of suitable grade for the conduct of the schools of that state.

In California an amendment is proposed to the constitution which provides that the state shall print and distribute the textbooks for the children of the state. Opposition to this method of issuing the books has grown up in various quarters, and the so-called "teacher's amendment" is proposed in opposition to the movement above described. The so-called "teacher's amendment" is in favor of the local adoption of textbooks as distinguished from the general state adoption.

In Texas a committee nominates to the governor 30 school

officers. From among these the governor selects nine who with himself and the state superintendent of public instruction constitute the board for selecting textbooks to be used throughout the state.

These different methods of dealing with the question of state adoption of textbooks all make it clear that there are dangers besetting the large business transactions which are involved. Evidently there are advantages in favor of a widespread use of uniform textbooks. Pupils who have to transfer from school to school within the same state system are seriously disadvantaged by a lack of uniformity in the text employed in the different schools. On the other hand, the moment the selections are made on a large scale, dangers arise which are very real and which show themselves in a political way.

Rural Schools

From a number of different quarters the rural school problem is suggested as one of the most significant of modern educational problems. A report prepared at Teachers College of Columbia University by Mr. Burnham, director of the Department of Rural Schools in the West Michigan Normal School at Kalamazoo, contains a detailed description of the financial and domestic character of two counties, one in the state of Michigan, and one in the state of Ohio. On the basis of this study of sociological conditions, Mr. Burnham has investigated the schools in the various districts of these counties, and has given a very vivid picture of the general problem of rural school organization.

Mr. E. T. Fairchild, superintendent of public instruction in the state of Kansas, has published a monograph through the Bureau of Education in which he draws attention to the fact that a majority of the whole school population of the United States is obliged to spend its time in poorly organized rural schools. The teaching body is immature; the buildings are unsanitary; the schools are without equipment in either books or scientific apparatus of any kind; there is little or no supervision. These deplorable conditions affect the city schools which are in very much better condition than the rural schools. The city schools very frequently receive students from the country schools, and

any lack of educational equipment in the latter will always be felt in the former. Mr. Fairchild, as the president of the National Education Association, will undoubtedly be able to bring his campaign for the betterment of rural schools to the attention of the country at large. Mr. Fairchild's criticism of the rural schools is supported by many other observers. For example, a similar report is made by Mr. Lindholm of the state of Wisconsin. Mr. Lindholm inspected 126 schools in twelve different counties. He found great differences between the different rural schools but in the main he points out that conditions are sadly in need of a remedy.

Unjustifiable Economy in Ohio

The schools of Ohio are suffering from a lack of funds. The last legislature passed a law which made the limits for all taxation ten mills. This law was passed with the avowed purpose of inducing the people of the state to come forward with their personal property and subject it to legitimate taxation. The device did not succeed, however, and the funds available in the state for public activities have been very materially reduced. The schools were the first public institution to suffer, in view of the fact that they depend upon immediate support and consume a very large part of the income of the community. All sorts of devices have been employed in the schools in an effort to meet the emergencies that have thus arisen. In some quarters the schools were closed early in the year. In other quarters school activities were curtailed. It is interesting to note that in some quarters this curtailment consisted in the dropping of the so-called "new subjects," while in others there was a uniform reduction in all of the activities of the school. In some quarters salaries were reduced. The outcome of this experiment in taxation is a matter of general interest to teachers and school officers. The lesson which Ohio furnishes to all educators is that there should be a very keen interest on the part of these officers in the problem of public finance. School officers could do no greater service for their communities than to bring to their attention such works as that of Professor Cubberley in which the whole matter of school taxation is made the subject of a careful

scientific study. School officers themselves should be prepared to show as Professor Cubberley has clearly shown in his book that the efficiency of schools depends upon a sound policy of collection and distribution of school moneys. In the meantime Ohio is suffering from a noticeable exodus of good teachers and superintendents who are going to states which do not try to conduct their schools and other public activities on ten mills.

Teachers' Health

The *Kansas City Times* reports an innovation in the requirements for admission to the teaching staff in that city. "All persons teaching in Kansas City public schools beginning this fall must undergo a medical examination and produce a health certificate signed by the Health Commissioner." The requirement of good health has long been among the requirements in the statutes and in the rules of many city boards. If Kansas City is going to put the requirement into vigorous and effective operation, it will furnish an example of great interest to the country at large.

New York Investigation

Professor Hanus and his associates on the educational aspects of the school inquiry, carried on under the general direction of a committee of the Board of Estimate and Apportionment of New York City, submitted their report about July 1. The report is now in press, and it is expected that it will be ready for distribution some time in the autumn. No attempt was made to make an exhaustive inquiry into all the activities of the huge school system of New York City. It was found necessary, owing to the limitations of time and staff, to restrict the inquiry to important aspects of certain fields only. Nevertheless, the report is comprehensive and far reaching.

It is the present plan to publish the report in two parts—Part I to consist of the principal findings and recommendations; and Part II to consist of the series of monographs on which Part I is based. This arrangement makes it possible for the person who has a general interest in this inquiry to get from Part I the information he may wish, without reading technical details; the specialist will desire those details, and he will find them in Part II.

As the city of New York, under the charter, is printing only two thousand copies, it would be well for all who desire a copy of this report to write without delay to Hon. John Purroy Mitchel (president of the Board of Aldermen), 51 Chambers Street, New York City, who is chairman of the Committee on School Inquiry.

Private Organizations Aiding in Support of Public Education

The Public Education Association of New York City is an organization of citizens who are interested in the development of the school system of New York. This association is able to collect enough funds to support a well-equipped office which can be used for the investigation of school problems and for the measurement of the efficiency of the school system. The organization publishes a bulletin which can be secured by addressing the secretary of the association, Arthur W. Dunn. Bulletin No. 4 sets forth the desirability of continuing through some organization the investigation which has recently been carried on in New York City by a committee of the Board of Estimates and Appropriation. Some outside scrutiny of the work of schools, this bulletin argues, is better than the examination of the system merely through its executive officers. The bulletin also announces that the association will carry on the work of the Board of Estimates. Since the publication of this bulletin the press announces that one of the members of the committee which helped Professor Hanus carry on the investigation in New York, is to be continued by the Board of Estimates and Appropriation as special agent for the examination of the budget items submitted by the superintendent of public instruction. Whether this will lead to a modification of the plans of the Public Education Association or not is not announced. In any case it is evident that New York has learned through the investigations of the special committee the lesson of the very great importance of a continual supervision of the school system through the study of the results attained by the schools. In the second place, the existence of the Public Education Association illustrates very clearly an example of support of the schools which may very profitably be followed in other cities.

Milwaukee Trade School

In 1906, a trade school was organized by the Merchants and Manufacturers Association in Milwaukee. In 1907 this school was turned over to the public-school system of the city. Announcement was made on August 2 that the school opened with forty pupils, seven instructors, and one principal. The total capacity of the school is 120 pupils. As soon as the summer months are over, it is expected that the number will increase so as to reach the capacity of the school. A new wing to the building has been completed at a cost of $115,000, making the total cost of the buildings $250,000. This school illustrates the way in which a new type of educational work may be added to the public-school system after it has been initiated by private enterprise.

New Italian Methods

The Montessori method continues to be a subject of vigorous discussion. The Bureau of Education has issued a pamphlet prepared by Miss Anna Tolman Smith. This pamphlet sets forth the essential practices of the Montessori schools and gives a brief review of the method itself. A committee consisting of members of the faculty and student body of Teachers College visited Rome for the purpose of inspecting the schools. Committees from England have also inspected the schools. American travelers in Rome are said to congest the Montessori schools to such an extent that admission to the schools is being restricted. The apparatus which is supposed to make easy the introduction of the Montessori method is now on sale in this country at a price which seems to the casual observer to be considerably above the actual material value of the apparatus supplied. The public press is interested in reporting the monograph from the Bureau of Education and the various discussions which are held at mothers' meetings and educational gatherings. In the meantime, there is a very distinct note of conservatism in the reports of trained observers who have seen the system in operation. Evidently the difference between an Italian school and an American school has not been properly evaluated by those who were at first most enthusiastic for this Montessori method.

Sensory training which has been loudly praised as a part of the new method, and has been referred to as the natural and legitimate application of Wundtian psychology, is certainly very far from the teachings of Wundt and his followers. The virtues of the Montessori system, or at least most of them, can be matched by equally efficient devices in American schools without the introduction of the elaborate paraphernalia which is now regarded by some as necessary to the system as it comes from Italy.

THE MOTIVATION OF SEVENTH- AND EIGHTH-GRADE HISTORY WORK

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The work with the 8B pupils on the United States Constitution, as handled during the past two or three years, furnishes a good illustration of motivation in history work. It had been the custom to spend six weeks upon the study of the United States Constitution, at the beginning of the National Period. The pupils considered this work exceedingly difficult and uninteresting, and the teacher had real difficulty in getting good work done. Because of the difficulty of the situation, the teacher had spoken to me about the advisability of omitting this work on the Constitution. However, it appealed to me as a piece of work that should be done, since many of the pupils do not reach the American history work in the fourth year of high school, and many who do reach the fourth year of high school do not elect the American history work. With this thought in mind I suggested that we devise some means of making the work more interesting and profitable to the pupils. The suggestion was finally made that the teacher organize the grade into a Constitutional Convention, indicating to each pupil the character that he was to represent in such convention. The teacher was skeptical, both as to the feasibility of the plan, and as to her ability to carry out the plan. Accordingly, another term passed in which the work was done in the old way with the usual difficulty. When the time came for this work the next term, the suggestion of a Constitutional Convention was repeated to the teacher. She still hesitated to undertake it, but finally asked that some assistance be given her in organizing and starting the work. This was a normal situation, with the teacher in proper frame of mind, although a little skeptical as to results. We planned the work together very carefully. A sufficient number of Madison's

Journal of the Constitutional Convention was secured (six copies) to enable the class of thirty-five pupils to get along fairly well. Madison's *Journal* had been referred to on previous occasions, but it is a very difficult work to handle and no use had been made of it.

The Constitutional Convention was organized by electing George Washington (the teacher), president, and by electing some member (not necessarily Madison), secretary. A committee was appointed to draw up rules to govern the deliberations and discussions. This committee was required to report at the second session. After the adoption of the rules, Mr. Randolph was permitted to open the main discussion by presenting the Virginia plan. The work from this point was necessarily very greatly simplified. The teacher experienced no difficulty in getting a hearty response from the pupils. In fact, the next meeting of the Convention became the chief topic for conversation. A particular topic was assigned for the next meeting, say for illustration, *the length of the term for which the President shall be elected.* A pupil's work in preparation for the next session was to find out his view upon this subject. It was the duty of the pupil representing Mr. Pinckney to be prepared to present Mr. Pinckney's views to the Convention. The pupil representing Mr. Sherman was to be prepared to present Mr. Sherman's views, and so on throughout the list. It was the further duty of each pupil to know whether the man he represented introduced any resolutions having reference to the length of the term of the President. When the next session of the Convention was called (a week later), each pupil was prepared to present his views with reference to the topic assigned, to enter into the discussions, to make motions, and to vote. In fact, he was prepared to be a real member of the Constitutional Convention and have a part in the making of the United States Constitution.

After the first topic had been worked over in this way there was no longer any doubt as to the success of the plan. The teacher was as enthusiastic as the pupils. She is a thoroughly competent teacher, and this has contributed much to the success of the plan. Since the plan was adopted two and half years ago, there have been five 8B Constitutional Conventions. The six copies of Madison's

Journal which were in the Public Library have been almost completely worn out. The school has since bought additional copies.

While this special work is being carried on and the session of the Convention is being held about once a week, the other days of the week are given to a systematic study of the Constitution—the reasons for calling the Constitutional Convention, the defects of the Articles of Confederation, the great compromises of the Constitution, the organization of the different phases of the government, the opposition to the Constitution and its final adoption by the necessary number of states, and finally the election of the first President and the organization of the new government under the Constitution. But, it must be said that this work is conducted in quite a different spirit than formerly. The pupils seem to assume more or less of a proprietary interest in the United States Constitution. They understand just how difficult a matter it was to make the Constitution, the differences of view which prevailed, the compromises, the divisions, etc., which took place during the process of making the Constitution and bringing it into final form.

Topics which are treated in sessions of the Constitutional Convention vary, of course, from time to time. A session is usually held upon the *powers of Congress* in order to call special attention to the elastic clause of the Constitution (last paragraph, Art. I, sec. 8) and prepare for the use of this clause by Hamilton in his conflict with Jefferson during the organization of the government. A session is devoted to the regulation of commerce in order to emphasize the compromises based upon the regulation of commerce. Another topic which has been found very helpful and lends itself readily for treatment in the Convention, is the basis for representation in the lower house. Other topics in connection with the executive which have been treated from time to time are: (1) a single, dual, or triple executive; (2) powers of the executive; (3) manner of electing the executive; (4) eligibility for re-election.

The edition of Madison's *Journal* which we have been using is indexed by subjects and by persons. After the pupil becomes accustomed to the general plan of the *Journal* and learns how to use the index, he finds no difficulty in ascertaining his view upon

any subject, by looking under his name in the index, and following through the points there indicated. He easily sees whether or not he has said anything upon the topic for discussion. The understanding is that in case he has said nothing he shall turn to the topic and read the views of one or two persons who do speak. This gives him the general line of argument. By keeping in mind his attitude in general it is possible for him to shape his views and say a word, even though he does not actually discuss the topic as indicated by the *Journal*. For instance, Alexander Hamilton when present was always conservative and doubted the advisability of conferring much power upon the poeple; while Wilson of Pennsylvania was thoroughly democratic, trusted the people, and sought at all times to give the people an opportunity to participate fully in the government. Wilson even favored the election of the President by direct vote. With his knowledge of the general attitude of Hamilton and Wilson, the pupils representing them would have little difficulty in properly representing them on almost any subject. And so it is with others although few are so easily represented as Hamilton and Wilson, since few are so consistent throughout.

In handling the Convention the teacher places all of the responsibility upon the pupils and so apparently has little to do in organizing or furthering the work. As a matter of fact, however, the teacher's work, especially when the work is being done for the first time, should be very carefully planned, and may require considerable extra time. The following gives the teacher's outline in preparation for the discussion of *the length of the term of the executive*. It will be noticed that with this outline before her, the teacher is prepared to say to Mr. Pinckney, in case Mr. Pinckney asks a question, "you will find your views explained on page 88." To Mr. Bedford she can say, "Your views as to the length of term, as also for re-eligibility, will be found on page 89." She can refer Mr. Hamilton to pages 183 and 185. Those not having a part in the discussion may be referred to the first plan on page 91, the plan as given in the first report of the Committee of the Whole on page 161, the further consideration of the report of the Committee of the Whole on the Executive on page 365, the agreement on the modification of the report of the Committee of the Whole on page

390, the unsettled opinion as to the length of the term as shown on page 422, the first mention of the present term on page 654.

The teacher's outline on the length of the term of the executive to which we have just been referring, follows:

LENGTH OF TERM OF THE EXECUTIVE

Terms of years left blank on Virginia plan (pp. 62 and 69).
Seven years agreed to in Committee of the Whole, discussion suggesting from two to eight years (p. 91).
Wilson moved for three years (pp. 88).
Pinckney moved for seven years (p. 88).
Sherman for three years, and against rotation (p. 88).
Mason for seven years and for prohibiting re-eligibility (p. 88).
Bedford against long term. Favored three years and eligibility for three terms (p. 89).
Ineligible after seven years agreed to by vote seven to two, Pennsylvania divided.
Final form of report of Committee of Whole on Virginia plan, seven year (p. 161).
New Jersey plan left years blank (p. 165).
Hamilton's plan favored life term of executive (p. 183), or "during good behavior" (p. 185).
Ninth resolution of Committee of Whole on Executive reported favoring seven years (p. 365).
Dr. McClurg moved "during good behavior" (p. 369). Seconded by Gov. Morris (p. 370). Opposed by Sherman, Mason (pp. 370–72).
Six years agreed upon (p. 390).
Mr. Williamson, ten or twelve years (p. 420).
Eleven, fifteen, twenty, and eight years suggested (p. 422).
Seven years agreed upon (p. 437).
Seven years in first draft of Constitution (p. 457).
Four years first mentioned in report of Committee of Eleven, Mr. Brearly, chairman Electors also proposed here (p. 654).
Mr. Rutledge moved to change to seven years. Failed (p. 664).
Four years in first complete draft (p. 707) and in final form (p. 756).

This illustration of motivized work on the Constitutional Convention has been worked out fully enough to enable any reader to take the idea and put it into practice. It is the belief of the author that our formal textbook work persists, because teachers are not helped to substitute something better and more life-giving. One of the aims of the present article is to aid such substitution.

This work on the Constitutional Convention uses the dramatic instinct, makes the pupil an actor of history, and gives interesting work which appeals to his best efforts.

History frequently fails of its purpose because it fails to live for the pupil. It is too often nothing more than verbal memory work. A sixteen-year-old girl once committed and recited to me the discovery of America by Cabot, without the least conception of the objective significance of what she was talking about. She had been permitted to recite in that way for so long, that I was forced to resort to drastic measures to awaken her.

History must live or it fails of its purpose. Dramatic treatment gives life. Last year a 7B class was plodding along with the situation in England and Holland that finally sent the Pilgrims to this country. It was a slow class and the teacher was thoroughly disheartened. "Don't blame the class," said I, "do something." The teacher was ready to do anything that promised relief. The next day English officers entered at recitation time with warrants for the arrest of twelve members of the class for not attending the Established Church services on the previous Sabbath. They were shackled and imprisoned. While in prison, they decided to leave for Holland in order to have religious liberty.

This was a new experience. The class was thoroughly aroused. The next day the class was in Holland, but they were suddenly interrupted by some of the children running into the room in their play, and to their amazement all of the conversation was in the Dutch language (6B pupils who were studying German played this part). A meeting was called and a decision reached to go to America in order that their children might grow up with English rather than Dutch, language, habits, and ideals.

By this time the class had entered fully into the spirit of the work. They "liked" history, and so did the teacher. From that time on the pupils were looking for opportunities to dramatize sections of the work. The teacher held back enough to make the pupils consider it a special favor, but continued to use this plan of motivizing and enriching the work.

A CHAPTER IN THE DEVELOPMENT OF ARITHMETIC TEACHING IN THE UNITED STATES

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III[1]

In considering methods of teaching a subject it is often profitable to investigate the methods which have been used in the teaching of this subject in the past. This is especially true of a subject, such as arithmetic, which has been taught since the time of the earliest schools without material change in content. In the case of arithmetic, a retrospective study of methodology is particularly illuminating, because the earliest method of instruction seems to have been considered efficient for a long period, there being practically no change until about 1825. The object of this paper is to give a notion of the arithmetic teaching in the schools of the latter part of the eighteenth and the beginning of the nineteenth century and to attempt an analysis of the method of instruction.

We have practically no record of the method of teaching arithmetic before the close of the Revolution, but several things lead us to believe that few changes were made in the method of teaching during the eighteenth century. We may then think of the schools of about 1800 as being typical, in respect to the teaching of arithmetic, of the schools of the eighteenth century. Concerning these schools we have the testimony of men who attended them.

It appears that in these schools arithmetic texts were seldom found in the hands of the pupils and it was unusual for the teacher to possess one. It is stated that many pupils never even saw an arithmetic. The master dictated or set "sums," as the problems were called, and the pupils worked them on scraps of paper. The teacher told the pupil the rule, and when the pupil had finished his "sum" he took it up to the teacher for approval, or disapproval. Often the teacher was surrounded by pupils waiting their turn.

[1] This article concludes the series begun in May and continued in June in the *Elementary School Teacher*.

As a rule each pupil had a blankbook made of a quire of paper folded and sewed together. This was his "Cyphering Book." After his work was approved by the master, the pupil carefully copied in his "Cyphering Book" the problem and its solution, together with the rule which the master had given him. The master usually possessed such a "Cyphering Book" which he had made as a pupil under his master and which now served as his source of "sums" and rules. It was also his criterion of correct answers and methods.

In Barnard's *Journal of American Education* we find a number of articles written by men who attended school about 1800. Some of their experiences seem to be so typical of the method of teaching arithmetic that we quote from them at some length.

". . . . At length, in 1790 or 1791, it was thought I was old enough to learn to *cypher*, and accordingly was permitted to go to school more constantly. I told the Master I wanted to learn to cypher. He set me a *sum* in simple addition—*five columns* of figures, and *six figures* in each column. All the instruction he gave me was—add the figures of the first column, carry one for every ten, and set the over-plus down under the column. I supposed he meant by the *first* column the left-hand column; but what he meant by carrying one for every ten was as much a mystery as Samson's riddle was to the Philistines. I worried my brains an hour or two, and showed the master the figures I made. You may judge what the amount was, when the columns were added from left to right. The master frowned and repeated his former instruction—add up the column *on the right*, carry one for every ten, and set down the remainder. Two or three afternoons (I did not go to school in the morning) were spent in this way, when I begged to be excused from learning to cypher, and the old gentleman with whom I lived thought it was time wasted; . . . . The next winter there was a teacher more communicative and better fitted for his place, and under him some progress was made in arithmetic, and I made a tolerable acquisition in the first four rules, according to Dilworth's *Schoolmaster's Assistant*, of which the teacher and one of the eldest boys had each a copy. The two following winters, 1794 and 1795, I mastered all the rules and examples in the first part of Dilworth; that is, through the various chapters of Rule of Three, Practice, Fellowship, Interest, etc., etc., to Geometrical Progression and Permutation."[1]

". . . . Printed arithmetics were not used in the Boston schools till after the writer left them, and the custom was for the master to write a problem or two in the manuscript of the pupil every other day. No boy was allowed to cypher till he was eleven years old, and writing and ciphering were never performed

[1] Joseph T. Buckingham, *Barnard's Journal*, XIII, 130.

on the same day. Master Tileston had been taught by Master Proctor, and all the sums he set for his pupils were copied exactly from his old manuscript. Any boy could copy the work from the manuscript of any further advanced than himself, and the writer never heard any explanation of any principle of arithmetic while he was at school. Indeed, the pupils believed that the master could not do the sums he set for them, and a story is told of the good old gentleman, which may not be true, but which is so characteristic as to afford a very just idea of the course of instruction, as well as of the simplicity of the superannuated pedagogue. It is said that a boy, who had done the sum set for him by Master Tileston, carried it up, as usual, for examination. The old gentleman, as usual, took out his manuscript, compared the slate with it, and pronounced it wrong. The boy went to his seat and reviewed his work, but finding no error in it returned to the desk and asked Mr. Tileston to be good enough to examine the work, for he could find no error in it. This was too much to require of him. He growled, as his habit when displeased, but he compared the sum again, and at last, with a triumphant smile, exclaimed, "See here, you *nurly* (gnarly) wretch, you have got it, 'If four tons of hay cost so much, what will seven tons cost?' when it should be, 'If four tons of *English* hay cost so and so.' Now go and do it all over again."[1]

As has been pointed out, arithmetic texts were scarcely used in the schools. To us this is probably the most conspicuous factor of this early teaching. This practice was probably due in the beginning to the fact that sufficient texts were not available to do otherwise.[2] But the continuance of a method of instruction which did not make use of a text cannot be due to texts not being available during the eighteenth century. Several texts by English authors were known in the colonies in the early part of the eighteenth century and by 1800 there had been at least fifteen arithmetic texts published by American authors.

Edmond Wingate published an *Artificial Arithmetic* in 1629. The fifteenth edition was published in 1726[3] and another edition in 1753.[4] Littlefield states: "A copy of the first edition is now in existence which was used in the Winslow family of Massachusetts for over one hundred years."[5]

[1] Wm. B. Fowle, *Barnard's Journal*, V, 336.

[2] There is evidence that arithmetic was taught in the colonies as early as 1665 and possibly as early as 1658. Suitable arithmetics were not known to any extent in the colonies until after 1700.

[3] A copy of this edition is in the Library of the University of Chicago.

[4] G. E. Littlefield, *Early New England Schools*, 163.

[5] *Ibid.*, 163.

Hodder's Arithmetic: or that Necessary Art made most easy, by James Hodder, writing master, was published in 1661. The twenty-fifth edition was printed in Boston in 1719.[1]

Cocker's *Vulgar Arithmetic, by Edward Cocker,* "Late Practitioner in the arts of Writing, Arithmetic and Engraving" was published in 1677. An edition of Cocker's *Arithmetic* was published in Philadelphia in 1779. It has been said that Cocker's *Arithmetic* "may be considered the father of modern arithmetics, as it furnished the plan which all of them have copied."

The Schoolmaster's Assistant, by Thomas Dilworth, was first published in 1743. It was republished in Philadelphia in 1769. I have a copy published in Philadelphia in 1790. The twenty-third edition was printed in Hartford in 1786; also an edition was printed in Wilmington in 1796, and one in New York in 1797. At the time of the Revolution and after until about 1800 it was more extensively used in this country than any other text.

That these texts did not become generally used in the schools and the method of instruction correspondingly changed seems to have been mainly due to a belief in the efficiency of the method of teaching arithmetic without a text.

To be sure, books were more expensive then than now, if we take into account the purchasing value of money. But this condition does not seem to have prevented the printing and distribution of religious writings and the almost universal use of the Psalter and Catechism in the schools. And certainly in the study of Latin, texts must have been used. "A printing press was set up at Cambridge (Massachusetts) as early as 1639, but it was wholly engaged in turning out controversial pamphlets of a religious nature."[2]

Another reason for believing that the efficiency of the "Cyphering Book" seems to have been accepted is that the first arithmetic published by an American author was a specific attempt to further the "Cyphering Book" method. Isaac Greenwood wrote *Arithmetic, Vulgar and Decimal: with the application thereof, to a variety*

[1] *Ibid.*, 167.

[2] Dexter, *History of Education in the United States*, 207.

of Cases in Trade, and Commerce,[1] which was published in 1729. He states what appears his chief purpose as follows:

"The Reader will observe, that the author has inserted under all those rules, where it was proper, Examples with Blanks for his practice. This was a principal End to the Undertaking; that such persons as were desirous thereof might have a comprehensive Collection of all the best Rules in the Art of Numbring, with examples wrought by themselves. And that nothing might be wanting to favour this design, the Impression is made upon several of the best Sorts of Paper. This Method is entirely new, ..."

The paper used in the book is thick, the type large. Words and phrases to which the author desires to call special attention are printed in italic characters, and, as more than half the book is, in the author's eyes, important, more than half is printed in italics. The method followed by the author seems to be in most cases to give the rule in each subject, then examples illustrating the rule, then examples for the student, and finally the proof. There is very little explanation aside from the rule. Each example has a "blank" beneath it for the student's "practice." There are no collections of examples, as in modern books. At times, though not always, terms, such as annuity, interest, etc., are explained.[2]

Greenwood's text seems to have not been well received and was used very little in the schools.[3] However, this same feature was utilized by Daniel Adams, who wrote *The Scholar's Arithmetic*, first published in 1801. In the preface of a revised edition, dated December 26, 1815, Mr. Adams writes as follows:

We have now the testimony of many respectable Teachers to believe, that this work, where it has been introduced into Schools, has proved a very kind assistant towards a more speedy and thorough improvement of Scholars

[1] J. M. Greenwood, "Notes on the History of American Textbooks on Arithmetic," *Report of Commissioner of Education for 1897-98*, 802. "There are two copies of this book in Harvard College library and one in the Library of Congress."

[2] *Ibid.*, 805.

[3] The second text by an American author was *A New and Complete System of Arithmetic, composed for the use of the citizens of the United States*, by Nicholas Pike in 1788. This is nearly sixty years after the appearance of Greenwood's text and apparently by this time the work of Greenwood was forgotten.

Pike says in the dedication of his text, "As this work is the first of the kind composed in America. . . . ." George Washington in his recommendation of Pike's book mentions that it is the first of its kind. That Pike did not know of Greenwood's book would seem to indicate that it made little impression and was soon forgotten, because Greenwood was professor of mathematics in Harvard College at the time he published his text and Pike graduated from Harvard.

in Numbers, and at the same time, has relieved masters of a heavy burden of writing out Rules and Questions, under which they have no long labored, to the manifest neglect of other parts of their schools.

To answer the several intentions of this work, it will be necessary that it should be put into the hands of every Arithmetician: the blank after each example is designed for the operation by the scholar, which being first wrought upon a slate, or waste paper, he may afterwards transcribe into his book.

This text apparently attained some popularity, for by 1815 it had gone through nine editions. I have seen a copy printed as late as 1824. I have a copy printed in 1820 which bears the imprint of the hand of some pupil who doubtless labored long over the involved and obscure problems.

Although we do not find other texts of this period making this specific provision for the "Cyphering Book" method, yet they were such that they contributed to this method of instruction. For the most part the texts were simply collections of rules and problems. Only occasionally do we find any attempt to explain or develop the rules and often the rules are not even illustrated by solving an example. Rules are given for every case. A set of rules are given for the Rule of Three with integers, another set is given for vulgar fractions, and still a third set for decimal fractions. Speaking of Dilworth's *Schoolmaster's Assistant*, Cajori says: "The whole book is nothing but a Pandora's box of disconnected rules. It appeals to memory exclusively and completely ignores the existence of reasoning powers in the mind of the learner."[1] (Dilworth's text was the most widely used book at the time of the Revolution and after to 1800.)

Such texts could serve for little more than a source of rules and problems. The extreme to which pupils and teacher alike depended upon the "rule" is shown by the following:

I quote the following from an article "Early School Days" in Indiana, contributed by Barnabas C. Hobbs. A law had just been passed requiring that teacher's examinations should be conducted by three county commissioners instead of the township trustees, as had been the practice before. "I shall not forget," says Hobbs, "my first experience under the new system. The only question asked me at my first examination was, 'What is the product

[1] F. Cajori, "The Teaching and History of Mathematics in the United States," *Circular of Information No. 3*, 1890.

of 25 cents by 25 cents?' We were not as exact then as people are now. We had only Pike's *Arithmetic*, which gave the sums and the rules. These were considered enough at that day. How could I tell the product of 25 cents by 25 cents, when such a problem could not be found in the book? The examiner thought it was $6\frac{1}{4}$ cents, but was not sure. I thought just as he did, but this looked too small to both of us. We discussed its merits for an hour or more, when he decided that he was sure I was qualified to teach school, and a first-class certificate was given me."[1]

We may appropriately characterize the arithmetic instruction up until about the close of the first quarter of the nineteenth century as the "Cyphering Book" method. Even though texts were used toward the close of this period, it seems that many of the essential features of the method were retained. The method persisted in some localities until well into the nineteenth century. Even today one occasionally finds a teacher who instructs his class without a text in the hands of the pupils. We retain certain features of the method when we require pupils to keep a notebook in which they record their work.

However, this is not the only phase of the method which seems worth considering. The instruction was largely individual. Each pupil worked on a problem of his own. When he had completed his work he took it to the teacher, and if he had not solved his problem, or had met with a difficulty, received individual attention.

The instructions given by the teacher were for his own benefit. Since there was no class instruction, there was no reason why the pupils should be kept together. If some pupils progressed less rapidly than the others, they did not hinder the work of those who were able to work more rapidly, and they in turn were not handicapped by being behind the class.

The writer does not wish to be understood as advocating the method of a hundred years ago as an efficient one for teaching arithmetic. An attempt to follow it under present conditions would most probably result in failure. And it must be admitted that for many of the practices of the teachers of this period we can present no justification. But it seems that what we have called the "Cyphering Book" method contains some features which are worthy of consideration.

[1] *Ibid.*, 16.

Toward the end of the first quarter of the nineteenth century the teachings of Pestalozzi began to receive attention in this country. We find his method of oral instruction incorporated in a text by Warren Colburn which was published in 1821. This text was adopted almost immediately by the schools and with its introduction we find the first marked change in the method of teaching. The decline of the "Cyphering Book" method accompanied the introduction of a new method.

CURRENT METHODS OF TEACHING HANDWRITING

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III[1]

Type of movement.—We turn now to the question of the type of movement and forms of drill which are used. It was stated in the early part of the discussion that the emphasis is very commonly laid upon the arm movement. As the arm movement component in the writing movement this component is variously described as "the fore-arm movement," "the muscular movement," or merely "the arm movement." None of these designations correctly describe the movement in question. The term "muscular movement" which is most commonly used is obviously a misnomer. The writer suggests that the most accurate designation is one which has been employed by McAllister, namely, "Arm movement with rest." This indicates that the movement is made by the whole arm moving from the shoulder, which is the case, and that the arm is not suspended, but rests upon the desk.

The majority of systems which are in use emphasize this arm movement with rest to a greater or less extent. The distinctions in current practice are two. The first distinction consists in the alternative between an exclusive arm movement and a movement which combines the arm and the fingers. Several writers insist upon entire exclusion of the finger component of the writing movement. The Palmer method perhaps represents most completely this attitude. Other systems defend the writing movement as most advantageous, which is a combination of the movements of the arm, hand, and fingers. This type of writing is recommended, for example, in the Bennett system, the California series, Spencer's Practical writing and the Whitehouse system. The movement of the hand about the wrist joint is ordinarily not mentioned, but when it is, it is for the purpose of condemning it.

[1] This article concludes the series begun in May and continued in June in the *Elementary School Teacher*.

The issue which is here raised has been discussed in a previous article in the present journal. It is not, therefore, necessary to consider it at length, but it will be sufficient to cite some authorities who favor the combined movement and to indicate briefly the function which the various component movements take in the combined movement. The only attempt at a scientific analysis of the writing movement, with reference to the part played by the fingers and the arm, has been made by Charles H. Judd. The report of this investigation may be found in *Genetic Psychology for Teachers*, chap. vi. The summary of the results which were found in this investigation may be stated in the words of the author:

> The general conclusion from a comparison of the large number of records of which the three reproduced represent the chief types, may be summed up briefly in the statement: In ordinary writing the fine formative movements are executed by the fingers; the movements which carry the fingers forward are executed by the hand or arm; and the pauses between groups of letters are utilized for long forward arm movements which bring the hand back into an easy working position (pp. 176, 177).

In the same place the author describes the type of writing which is characteristic of those who use predominantly the arm movement in the formation of letters:

> This writing is typical of a whole group of cases in which the movement is coarse, and more generally in which much less attention is given by the writer to questions of form.

We have here indicated a relation between movement and the form of writing which is somewhat different from that described in the quotation above given in the discussion of this question.

Another quotation from a prominent handwriting expert upholds the same position:

> It is possible to write entirely with the fore-arm movement without any separate action of the hand and fingers, and many superior penmen write in this manner. But the easiest, most rapid, and most perfect writing is that produced with the fore-arm movement used in connection with a slight action of the hand and fingers by which the small portions of the writing are produced.[1]

If one may venture a prediction it is that the more moderate procedure which recognizes the value and place of the movements of the fingers and the hand in the production of the letters will finally prevail against the extreme position taken by the advocates of the exclusive arm movement.

[1] A. S. Osborn, *Questioned Documents*, p. 108.

A second distinction in relation to this question is that between the practice which involves the use of the same type of movement through the grades, and the practice which allows a somewhat different form of movement in the earlier grades from that which is to be ultimately developed. All of the more moderate writers upon penmanship allow the child in the primary grades to use a movement which is described by one as "the relaxed finger movement," or by another as "the easy finger movement." There is a general agreement upon the evil of the cramped type of movement which was so characteristic of the writing in the earlier grades in the old days when the copy-book was not supplemented by any other means of teaching. This cramped movement is generally avoided by allowing the child at the beginning to write upon the blackboard and to make the transition to the ordinary sized writing upon paper by gradual steps. These steps include the use of crayon or large lead pencil and large sheets of rather rough paper throughout perhaps the first grade. In the second grade the paper may be reduced gradually to the ordinary size and the writing may likewise be reduced to the same extent. In this form of procedure the child is encouraged to write at first with much the same movement which he uses at the blackboard. This involves the arm movement without rest chiefly. As the child comes to write smaller and to use the finger movement more he tends to retain the same freedom which he has previously possessed. When he then comes in the third, fourth, or fifth grade to learn the arm movement with rest, in which the arm oscillates upon the muscle pad of the fore-arm, he is not required to make a complete transformation of his movement, but only to add to it a type of movement which he had not before acquired, and to co-ordinate it with the movements which he previously made.

This description represents the practice which is found in some systems which have studied most closely the psychology and pedagogy of writing, and in the opinion of the writer is the best method of developing the process. The introduction of the fore-arm movement with rest marks an advance to a much more accurate and finely adjusted writing movement, and should, therefore, be deferred until the child has already acquired some facility

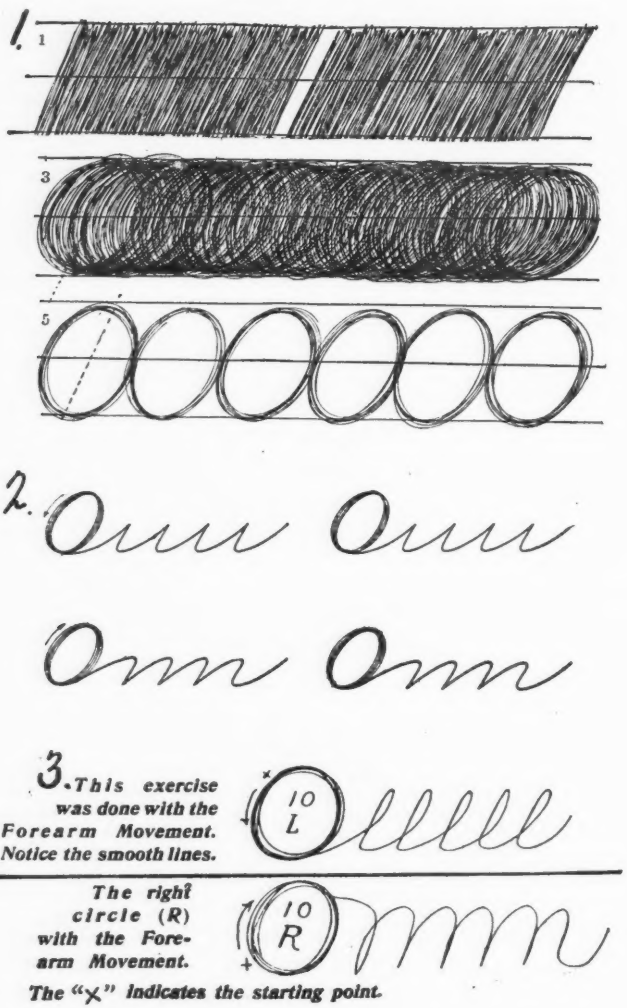

FIG. 5.—Illustrations of formal movement drills. 1. From the Palmer Primary cards for Grade II. These are also used with single spacing. 2. From the Economy system for Grade V. 3. From the *Whitehouse Copybooks* for Grade I. (Reproduced with the permission of the publishers.)

in the less exact use of the pencil, and until he has reached the stage in his development when he is capable of acquiring with facility a high degree of skill.

Movement drills.—We may now briefly review the types of drill which are used to secure the best form of writing movement. Certain drills are used pretty universally and the differences which exist are chiefly in matters of detail. We may distinguish in general two types of drill, one which is purely formal, and the other which is used in connection with the actual production of letters. Of the purely formal drills the most frequently used are the retraced oval

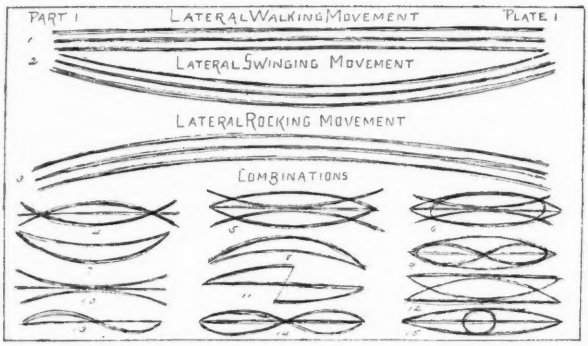

FIG. 6.—Illustrations of the lateral movement drills as used in the Bennett system. Reduced to one-half size. (Reproduced with the permission of the publisher.)

in both directions, the straight up-and-down stroke, and the retraced horizontal stroke. The continuous, progressive oval may be looked upon as a modification of the retraced oval. Somewhat less frequently used forms of drill are the continuous "*m*" stroke, "*u*" stroke, and "*l*" stroke (see Fig. 5). The aim of these drills is evidently to give the pupil practice in the use of the arm movement in the production of the letters.

Another type of drill is particularly directed toward the development of the arm component in carrying the hand along the line while the letters may be produced by the finger and the hand. This type of drill has been particularly developed in the Bennett method (see Fig. 6). This method in fact excludes entirely the

oval and the up-and-down drills. The drills which are included in this method are the back-and-forth horizontal stroke, the so-called swinging and rocking stroke, and the development of the "*i*" and the "*n*" out of a combination of these strokes with an intervening downward stroke. This forward-and-backward movement is used even in the development of the letters themselves, as well as in the movement between the letters. Thus "*a*" is

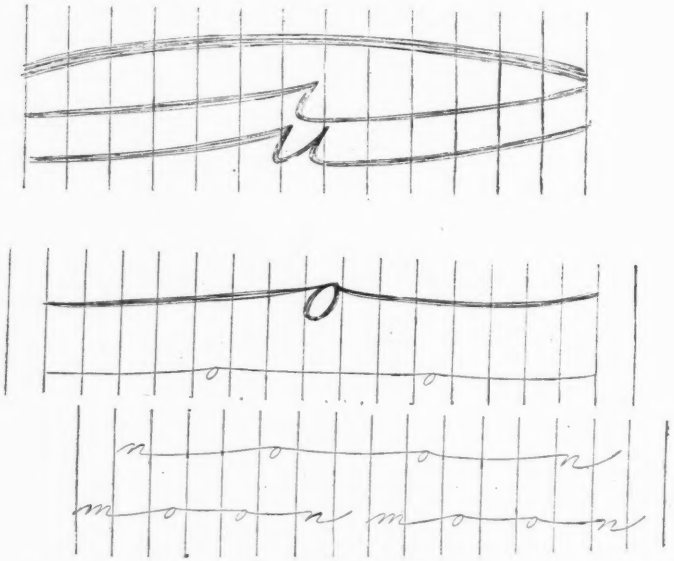

FIG. 7.—Illustrations of exercises with laterally spaced letters. From Houston's *Copy Slips* for Grade III. (Reproduced with the permission of the publisher.)

produced by a combination of the rocking and swinging movement with the downward movement following. This same lateral movement is emphasized in certain drills used by Houston, Berry, and others (see Fig. 7). These drills consist in a succession of letters which are connected by strokes an inch or more long. In such a drill it is necessary to combine smoothly the movement which produces the letters and the movement which carries the hand across the page. Since this touches upon the essential

problem in the development of the writing co-ordination the writer believes that such drills are of the highest importance. The oval and the straight up-and-down stroke are useful to develop an easy, flowing movement, but lose some of their importance if one is not seeking to develop the exclusive arm movement with rest.

Only the commonly used formal drills have been here referred to since more labored forms are a matter for individual choice. A great many drills which consist in retracing letter forms or incorporating into the formation of the letter one of the formal drills, have been devised. These may be useful in compelling the pupil to use a free movement in the production of the letter, but are of less importance than the more formal drills.

Application of drills to letter-formation.—The application of the various formal drills to the different letters was touched upon in the description of the order of development of the letters. If this application is made a corresponding order of development will take place in the case of the formal drill. That is, the direct oval may be practiced in preparation for the drill upon the *i*, *u*, and *w*, and the capital letters *O*, *C*, *A*, *G*, *D*, and *E;* the reversed oval may be made the basis for the development of the *n*, *m*, and *v*, and the capital letters *I*, *J*, *P*, etc. Finally the straight up-and-down drill may be used to introduce the *t*, *d*, etc., and the loop drill in connection with the loop letters.

Rhythm and counting.—A very important aspect of the teaching of writing hitherto not mentioned is that of rhythm and the means of attaining rhythm. Experimental investigations have shown that one of the main differences between the writing of the child and of the adult is that the latter is very much more characterized by rhythm than the former. That is, the adult tends to write in time as though to music. The successive strokes, though very different in length, tend to approximate each other in time. It has also been shown that the use of an imposed rhythm, that is, the requirement that the child write according to a certain rhythm, tends to unify his writing and render it more mature in character.

This principle has been widely utilized in the teaching of writing. The main question in this connection concerns the rate

of rhythm which is to be used and the manner of counting or of inducing the child to write in a rhythmical fashion.

The advocates of the free-arm movement have performed a good service to the pedagogy of writing by their insistence on the device of counting. They have not been so fortunate, however, in the choice of the rate of rhythm, particularly for the lower grades. As has been already mentioned, the rate of movement which is ordinarily chosen is 200 per minute, and no distinction is made between the different grades. The question of the rate of movement which is adapted to the different grades is easily susceptible of investigation. The writer has undertaken to determine the ability of children of different ages to make up-and-down strokes, with the result shown in the accompanying table. From this table it appears that three children of grade IB made between 70 and 79 double strokes per minute, and so on. (The column in which the median falls in each grade is indicated by printing the number in that column in black face.)

TABLE III

GROWTH IN RAPIDITY OF GRAPHIC MOVEMENT THROUGHOUT THE GRADES

Grade	60–69	70–79	80–89	90–99	100–109	110–119	120–129	130–139	140–149	150–159	160–169	170–179	180–189	190–199	200–209	210–219	220–229	230–239	240–249	250–259	260–269	270–279
IB	...	3	2	**2**	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IJB	1	1	...	...	1	1	1	**3**	1	1	...	...	1	...	...	...	1	1	...	...	...	...
IIA	1	...	...	1	1	3	1	2	**2**	2	...	...	1	3	1	...	...	...	...	1	...	...
IIIB	...	...	1	1	2	3	**3**	...	...	...	1	1	2	1	1	...	...	...	...	...	...	...
IIIA	...	...	...	...	...	...	1	...	...	2	...	1	5	2	**5**	1	4	...	1	...	1	1
IVB	1	...	1	...	1	2	...	...	**2**	...	...	1	...	2	...	...	2	...	...	1	...	...
IV	...	...	...	...	1	2	1	...	2	...	3	3	**6**	2	3	1	2	...	4	...	...	...
V	...	...	...	...	...	1	2	1	...	2	3	1	7	**5**	2	7	...	1	1	...	1	...
VI	...	...	1	...	2	1	4	4	1	**4**	4	3	2	2	2	...	...	...	...	1	...	...
VII	...	...	...	...	...	...	1	1	1	...	3	3	1	**5**	2	4	3	2	2	1	...	...
VIII	...	...	...	...	...	1	1	1	3	4	5	**2**	1	2	5	3	2	3	...	...	...	...

Several facts appear from this table. In the first place, it is evident that there is wide variation in the ability of children in the same grade to write rapidly. In grades IIA and IVB the fastest child writes more than four times as fast as the slowest. It is clear that some provision must be made for these differences. When the pupils are writing in concert to a rhythm which is

indicated by the teacher they must write at the same rate. When they are writing individually, however, some should write faster and some more slowly than this standard.

In the second place, it is evident that the rate of writing of a grade is influenced by the method of teaching as well as by the maturity of the pupils. Thus Grade IIIA is faster than the preceding and following grades, and Grade VI is slower. The full significance of this fact cannot be known unless the quality of the writing is also measured, but the fact remains.

Finally, in spite of variations among the individual grades, it is clear that there is a gradual increase in speed from the lower to the higher; and, if a uniform method were pursued throughout, this progression would, in all probability, be fairly regular. The particular standards which are suitable for the different grades must be established by more extended trial. A tentative set of standards may be proposed for trial and modification. The units refer to double strokes consisting of an upward and downward straight line with sharp angles at top and bottom. Grade I, 80–90; II–III, 125–50; IV, 175; V, 200; VI–VIII, 225–50. The speed of writing letters is about half as great as the speed of making double strokes.

There is some difference in procedure in the use of counting. The count is ordinarily made upon the down stroke. Sometimes, however, both the down stroke and the up stroke are counted, and in one case, that of the Bennett method, the count is upon the up stroke or the connecting stroke only. We have here a difference in procedure which is likely to have considerable influence upon the type of writing and which deserves attention. It is evident that emphasis will be placed upon the stroke which is made at the time the count is given. The ordinary procedure, then, places the emphasis on the downward stroke, whereas the Bennett method places the emphasis upon the connecting stroke and holds that the downward stroke will pretty largely take care of itself. The writer looks upon this as a very interesting idea but has no basis for judgment as to its merits, except the fact that it emphasizes the forward push of the hand. Since this is the element which is likely to be weak in the writing movement,

it seems possible that a device which will emphasize it may prove worthy of adoption.

The time is ordinarily indicated by counting or by making a series of raps with a ruler, or hand claps, etc. Little, if any, use, so far as the writer knows, is made of music to indicate the time in writing, but the success with which music is used to mark time for marching, dancing, gymnastic exercises, etc., suggests that it would be well worth trying in this case also.

Style of alphabet.—The form of letter which is used as a model for the child is of a good deal of interest. There is a very strong tendency for the child to imitate the style of writing which is set before him. This can easily be verified by examining any set of samples of children's writing. They invariably resemble the copy in general style. The importance of this fact does not lie so much in the relative virtue of one form or another in itself so much as in the fact that certain styles of letter are more readily produced than others, and, therefore, involve a better type of movement. That this is so is an indication that the reverse of the opinion which is sometimes held, is, at least to a certain extent, true. The movement is the reflex of the form as much as the form is a reflex of the movement. It is important, then, as suggested in an earlier part of this article, that the letter be such as suggest fluency of movement. The writer believes that this can be best attained by the use of the reproduction of actual writing rather than of copies of engraved letters. See illustrations from the Bennett and the Palmer systems (Fig. 8).

These remarks will indicate the point of distinction of the various forms of alphabet which are used. We may perhaps classify the various styles of alphabet according to their probable ancestry. There are, in general, two strains which may be traced in the various styles. One originated in the Spencerian hand and was modified in the business colleges, and may be called the business or arm-movement style of writing. This writing usually has considerable slant, ranging about 60 degrees, though not so much slant as the Spencerian style. In form, the turns of the letters are relatively sharp and tend to become angular. Some of the systems, as the Bennett method, the Houston Copy Slips, the

Palmer method, etc., which use this style of writing, employ the reproduction of actual writing in their copies. Others, such as Spencer's Practical Writing, the California series, and the Standard Free-hand Writing, use an engraved style of script which suggests the written forms (see Fig. 9).

The other line of development originated in the vertical writing, which marked the introduction of a relatively new style of script.

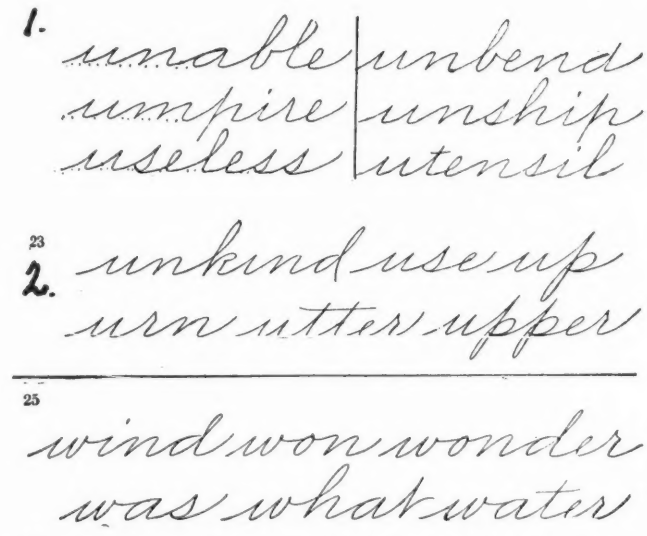

FIG. 8.—Illustrations of copy reproduced from actual writing. 1. From the Bennett method, Grammar Series. 2. From the Palmer method. (Reproduced with the permission of the publishers.)

This writing was chiefly characterized by the extreme roundness and width of the turns, and hence by the breadth and squat appearance of the letters. These letters were also characterized by extreme simplicity, every possible superfluous stroke being omitted. When the vertical writing was, in general, given up, many systems used the same style of writing but modified it slightly by introducing some slant. Such a style is represented in the Whitehouse system, and Barnes's Natural Slant.

A third group of systems occupy an intermediate position between these two extremes, and almost every degree of difference may be found.

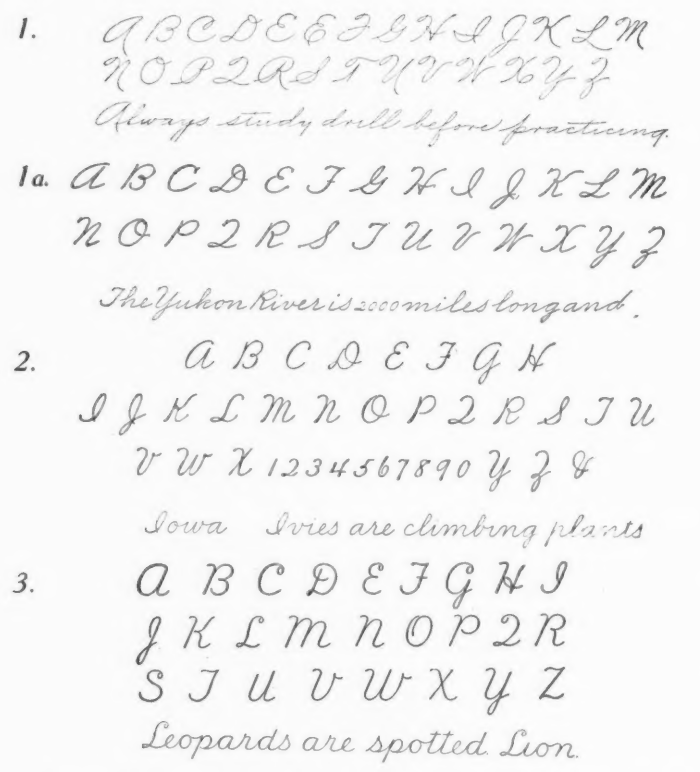

FIG. 9.—Illustrations of the three kinds of script. 1. The business, free-hand style; from the Palmer method. 1*a*. The same style engraved. From the Standard Free-Hand system. 2. Intermediate style from the Medial method. 3. The extremely round and simple style. From Barnes's *Natural Slant Penmanship*. (Reduced to ½.) (Reproduced with the permission of the publishers.)

The advantages claimed for the vertical style of letter and its successors are based upon the two points of legibility and economy. The legibility rests mainly on the relatively upright position of

the strokes, and the economy upon the paucity of the strokes which are necessary to write the letters. The advantages upon the side of the opposing style of script are based upon considerations of ease and fluency of movement. The issue between legibility and fluency is clear cut. The writer believes, however, that the style of letter should be chosen on the basis of its adaptability to a fluent movement, rather than primarily on the basis of its legibility, since the legibility of writing depends, not so much upon the ideal which it is supposed to copy, as upon the degree which it approximates the ideal; and it is much more likely to approximate the ideal if it can be made with an easy, fluent movement. In regard to the economy supposed to be effected by lopping off certain of the strokes, such as the beginning up stroke of the *i* and *j*, it is to be said that simplicity of objective form does not necessarily mean simplicity of movement. The pen at the end of a word is usually at the bottom of a stroke. It therefore has to pass from the base line to the top of the letter through the air or upon the paper. Certain experimental results have shown that in similar cases, such as the crossing of the *t* or the *x*, it takes as long for the pen to pass through the air as it would take to make the stroke upon the paper. Furthermore, it is probable that there is more likely to be a considerable pause at the beginning of the stroke when it is started in such fashion as in the case of the letters referred to. It is easier to begin a letter by an introductory stroke so as to get one's bearings, so to speak. This, as well as other similar issues, may well be subjected to experimental investigation for final settlement.

The above principles will indicate without a more specific illustration the general type of letter which is most desirable. Considerable latitude as to details of form and style of letter may exist within the range of letters which meet the general principles laid down. A somewhat rounder and more nearly vertical style of script might well be used in the earlier, than in the later, grades.

Organization of work for the different grades.—The principles underlying the organization of the work for the different grades have been referred to in the discussion of the particular methods of teaching. They may here briefly be brought together. The

question of the time of beginning writing in general was touched upon in discussing the replies from the questionnaire. It is held by a number of writers upon the pedagogy of handwriting that the ideal course to pursue, from the point of view of the writing itself, would be to defer the teaching of writing until the second or third year. This, however, appears to be impracticable, and the question remains as to the type of writing which shall be pursued in the different grades. Several of the systems which are under discussion make little or no distinction between the work to be given to the different grades. The courses are organized on the basis of a year's work and the pupil is put through the same work whatever his grade. The most thoroughgoing example of this type of procedure may be seen in the Palmer method. Certain of the other systems vary the work slightly in point of complexity in the different years, but in general repeat the same course. An example of this may be seen in the Steadman method.

On the other hand, the methods which lay little stress upon the movement drills, and which rely on the copy-book, may make little distinction between the work of the successive years, except in the subject-matter of what is written. In such case the first book may begin with one space letters and then introduce the multiple space letters in the course of the book, and defer the capital letters to the end of the first book or the beginning of the second. The size of the letters is usually decreased in the first two or three books. From this point on, longer words and sentences are used, and in the later books various business and social forms are introduced. But the formal side of the writing is very little changed. The chief respect in which a rational system of grading is introduced then, is in the distinction between the type of writing required in the lower and the higher grades, and the extent to which the specific writing instruction is given. Without stopping to detail the variations in method, we may outline a typical curriculum in writing, which aims to meet the different stages of development of the child.

In such a course the aim of writing in the different divisions of the school is radically different. In the primary grades the aim is to develop a fairly accurate perception of the form of the

letters, and the ability to write with some facility, using free and not very precise movements. The writing for the child of these years is mainly a means of expression and not a matter of technical skill. The analogy may be drawn with the development of the child in drawing. The primary child does not draw to reproduce with accuracy the form of objects, but to express in a more or less symbolic way the ideas which he has in mind. In the same way, writing may be made a means of expression without undertaking to develop extreme accuracy.

In the intermediate grades the child should begin the formal drill which will enable him to acquire greater skill and fluency in writing. He is now interested in developing greater accuracy in his manual activities. He realizes the discrepancy between his earlier, rough attempts and the standard which is set before him. He becomes interested in the accurate use of tools and weapons, for the sake of development of skill for its own sake. This is the time, then, when he will be most interested in the formal drill in writing.

This development of skill and facility in the use of the pen should be accomplished, in the main, in two or three years. No particular difference in the type of training to be given in this group of years has been worked out. The best procedure, so far as we have basis for judging, is to determine upon an order of development of the letters and drills which is consistent and progressive, and go through this system in the two or three succeeding years of this period, placing special emphasis upon features which particular classes or individuals find most difficult. At the beginning of this period the form of the writing is likely to deteriorate for the time being. This is not at all a serious matter, and the form will soon improve if the drill is wisely chosen and the speed which is used is not too great.

If the two or three intermediate grades have been well trained, the aim in the upper grades may be merely to review that which has been already attained, and to develop somewhat greater speed and fluency. It is incorrect to assume, however, that the subsequent writing will take care of itself if the earlier training has been correct. It is probably not necessary to spend so much time

upon drill at this time; but two or three short periods a week may profitably be spent in reviewing the drills which have been previously learned. In addition to this it is probably necessary to introduce some motive for the maintenance of careful writing in all the work. This might be done by holding occasional tests and giving grades on the basis of these tests, or by grading the writing which is done in other school exercises. This would emphasize the need of care, not merely in the writing lesson, but also in all written work. Experience shows that not even at the end of the elementary-school period can attention to writing be entirely withdrawn. Occasional drills might profitably be given even in the high-school period, and some attention be given to the excellence of the pupil's general writing.

This course in each part assumes the other parts and is an organic whole. What is said concerning each grade applies only in case the system is carried out throughout the grades. For example, if the training which is described for the intermediate grades is not given, it will be necessary to devote more time and energy to the writing in the upper grades, in order to secure good results. This principle of the organic unity of the whole course has often been flagrantly violated. Pupils have begun under one system and in the middle of their course a new system has been introduced, and it has often been the case in this way that the same person's handwriting has been torn up by the roots and reorganized two or three times. It is to be emphatically said that a relatively poor system carried through consistently is better than a continual shifting from one to the other, and it is to be hoped that the modern attempt to base the discussion of handwriting upon a scientific foundation will prevent the sudden and complete transitions from one extreme to another, which have characterized the past practice.

A THREE-FOOT SHELF FOR A TEACHER'S PROFESSIONAL LIBRARY[1]

Compiled by IRENE WARREN
Librarian, School of Education

Any collection as limited as this is certain to omit valuable books. These books are offered to the teachers of the elementary and secondary schools, as representative of the educational literature of today, and are indicative of the rapidly increasing and widening range of educational contributions.

Monroe, Paul, ed. Cyclopedia of education, vol. 1, 1911. Macmillan.
———. Textbook in the history of education, 1905. Macmillan.

Brown, E. E. The making of our middle schools, 1903. Longmans.
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Pestalozzi, J. H. Leonard and Gertrude, 1885. Heath.
Rousseau, J. J. Émile, 1885. Ginn.

Dewey, John. School and society, 1900. University of Chicago Press.
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Bagley, W. C. The educative process, 1906. Macmillan.
James, William. Talks to teachers on psychology, 1902. Holt.

[1] Prepared for the Library Exhibit of the Library Section of the National Education Association.

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Hall, G. S. Youth, 1906. Appleton.
Kirkpatrick, E. A. Fundamentals of child study, 1903. Macmillan.
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Strayer, G. D. A brief course on the teaching process, 1911. Macmillan.

Bourne, H. E. Teaching of history and civics in the elementary and secondary schools, 1903. Longmans.
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Palmer, G. H., and Palmer, A.F. The teacher. 1908. Houghton.

BOOK REVIEWS

Examples of Industrial Education. By FRANK M. LEAVITT. Ginn & Co. Pp. viii+330.

Professor Leavitt defines industrial education as the training which should be given to that large group of children who are not going to higher schools. The higher schools are vocational in a very proper sense of the term, but they are limited in scope, not preparing for the simpler and more common industries. The opportunities offered by the higher schools are therefore inadequate from the point of view of the great majority of the people.

The second part of Professor Leavitt's discussion sets forth the sources of the present vigorous demand for a modification of our American schools in the direction of more industrial training. Organized labor when it is clear as to the meaning of such training, the manufacturer who wants better labor, the professional educator, and finally the social worker who sees the conditions under which most boys and girls live, all unite in demanding a reorganization of our school system. No mere addition to the course of study will satisfy this demand, there must be a genuine remodeling of the school.

The third part of the book describes what has been done at different centers in the United States in the organizing of industrial courses. Many summaries of this type have appeared in recent years in reports of commissions and in reports of committees. This summary is, however, more complete and consequently more valuable to the student than any of the other reports. It classifies the schools also in such a way as to define clearly the underlying principle exemplified in the different experiments.

The book is well adapted for use as a textbook with teachers' classes. The individual teacher, whatever his part in the elementary school, will also find it profitable to acquaint himself or herself with the movement which is exercising so powerful an influence in present-day elementary education.

Professor Leavitt's recommendation for a solution of the problem presented in his summary of existing conditions is tempered by a recognition of the necessity of dealing with the present schools and reorganizing them rather than merely adding to them. He is prepared accordingly to favor several plans as particular circumstances may dictate in various cases. Some differentiation from the sixth grade on is the general solution of the problem, and much preparatory work can be carried on below the fifth grade in anticipation of the reorganization which is to be entered upon at the sixth grade. The exact character of this differentiation and of the preparatory work remains to be worked out in subsequent studies.

CHARLES H. JUDD

A Scale for Measuring the Quality of Handwriting of School Children. By LEONARD P. AYRES, Department of School Hygiene, Russell Sage Foundation. New York, 1912.

This report sets forth the results of an investigation of the legibility of handwriting and of an attempt to construct a scale for the measurement of legibility on

the basis of this investigation. As a basis for the study a large number of samples of the handwriting in the upper school grades were collected from forty cities in widely different parts of the United States. Of the samples which were returned 1,578 were found to be satisfactory and were used for the investigation. The method by which the samples were graded was to measure the average time which was required by ten investigators to read the individual samples. For this method it was necessary that the content of the different samples be not the same; on the other hand it was necessary that they be of approximately equal difficulty. These requirements were met by using the same subject-matter but throwing the words out of their natural order. Thirty different arrangements of the words were made.

After the time of reading the samples had been measured they were arranged in order on the basis of this measurement. The distribution of the papers was then investigated in order to determine whether it followed any law, particularly whether it accorded with the normal distribution. It was found in a preliminary examination that the samples did apparently fall into such a distribution. Assuming a normal distribution, then, the samples were divided into steps of equal interval by separating them into such groups as would be produced in the normal distribution by dividing it into equal steps. It was found that the successive steps which were thus marked off and which have been described as equal in legibility were not exactly equal in the time which was required to read them. They rather formed a series which progressed with approximately the ratio of 117 per cent. This was due to the fact that there was greater difference in the time required to read the samples which represented the successive steps in the lower part of the scale than in the upper part. In other words, a progression by (assumed) equal steps in the objective quality of the writing corresponded to a progression by regularly diminishing steps in the speed at which the writing could be read, or the subjective legibility. The actual series of steps nearly approximated a regular progression so that a theoretical series, in which there was a regular progression of 117.2 per cent between the successive steps, was substituted for the actual one.

This gives us a series of samples, then, which are assumed to progress by equal steps in legibility from the lowest to the highest. The whole range of distribution was divided into ten steps and designated by the numbers 1 to 100, but only those from 20 to 90 are actually represented upon the scale. This form of division is used because it corresponds to the grading in common use.

In order to meet one of the criticisms to which the Thorndike scale is subject, the author selected and furnishes for each step in the scale a sample of three styles of writing. These styles are distinguished according to their slant into vertical, medium slant, and extreme slant writing. There are then in the scale three parallel series of samples, and in measuring any particular sample, the style of writing on the scale which it most nearly resembles is to be chosen for comparison. This device is undoubtedly calculated to make the grading of writing by means of the scale very much easier.

It may be pointed out, however, that there are difficulties in using the scale as it stands as a means of grading the writing of the children in the different school grades. This is due to the fact that a different standard should be required of the children in the different years. For example, the writing which is equal to quality 60 may be perfectly satisfactory for a sixth-grade child but not for an eighth-grade child. Therefore, in order to make the grade conform to the grading in the other

school subjects the measurements in the lower grades must be transmuted into other terms. This difficulty might be overcome by fixing a standard for attainment by the different grades and designating this standard by the mark 90 for that grade. The development of such a standard makes a suitable problem for investigation.

Another difficulty which will be met in applying the scale for grading writing is that the greater part of the writing of the school children will fall within the middle divisions of the scale. That is, according to the law of normal distribution which was found to apply to the writing of school children, approximately one-half of the cases fall between the grades 40 and 60 upon the scale and one-quarter fall below grade 40. This means that if 70 per cent were taken as the passing mark, as it ordinarily is in school work, three-quarters of the children would fail to pass. Obviously, then, the results of measurement by the scale cannot be used directly to express the grade of the child's writing.

The other purpose for which the scale is intended is for the survey of writing of children in different school systems and under different methods of instruction. It is intended, in other words, to be used as a tool for investigation. From this point of view, as also from the point of view of practical use in the schoolroom, the scale by itself is very deficient for the reason that it measures only one of the essential characteristics of good writing. The acquirement of speed is as essential in learning to write as the acquirement of legibility. It is, therefore, not sufficient in judging a child's writing to measure merely the legibility. The scale as it stands can be used, however, as a basis for a part of the test, and is probably adequate, provided it is supplemented by a measurement of speed.

As a measurement merely of the scale of legibility, the scale appears to be very well constructed. The fact that it conforms so closely to the normal distribution gives a presumption in its favor. The fact that it was constructed on the basis of objective measurement rather than of mere subjective judgment is also a strong point in its favor. It cannot be applied, of course, by the same method of objective measurement by which it was constructed, but the fact that it is based upon a perfectly clear and unambiguous quality of writing will doubtless make the results of its application fairly uniform and reliable. Whether or not this expectation will be confirmed by trial remains to be seen, but at any rate the scale merits careful trial under various conditions. If it proves to be an accurate means of measurement it will furnish an exceptional means of comparing writing in widely different places because of the prominence of the agency which stands sponsor for it.

FRANK N. FREEMAN

THE UNIVERSITY OF CHICAGO

BOOKS RECEIVED

AMERICAN BOOK CO., CHICAGO

A Study of the Paragraph. By HELEN THOMAS. Cloth. Pp. 125. $0.50.

Elementary Physiology. By JOHN CALVIN WILLIS. Cloth. Illustrated. Pp. 400. $0.80.

Trading and Exploring. By AGNES VINTON LUTHER. Cloth. Illustrated.

APPLETON & CO., NEW YORK

A Fifth Reader. By CLARENCE F. CARROLL and SARAH C. BROOKS. Cloth. Illustrated. Pp. 479. $0.45.

CAMBRIDGE UNIVERSITY PRESS

Cambridge Geographical Text Books. By A. J. DICKS. Cloth. Illustrated. Pp. 362. $1.00.

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Prehistoric Man. By W. L. H. DUCKWORTH. Cloth. Pp. 156. $0.40.

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The Civil War. Edited by CHARLES L. BARSTOW. Cloth. Illustrated.

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False Modesty. By E. B. LOWRY, M.D. Cloth. Pp. 110. $0.50.

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The Normal Child and Primary Education. By ARNOLD L. GESELL. Cloth. Illustrated. Pp. 340. $1.25.

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The Expression Primer. By LILIAN E. TALBERT. Cloth. Illustrated. $0.30.

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Festivals and Plays. By PERCIVAL CHUBB and His Associates. Cloth. Pp. 403.

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The Industrial Primer. By MARY B. GRUBB and FRANCES LILIAN TAYLOR. Cloth. Illustrated. Pp. 127. $0.30.

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Children's Classics in Dramatic Form. Book Five. Cloth. Illustrated. Pp. 326. $0.60.

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The Water-Babies. A Fairy Tale for a Land-Baby. By CHARLES KINGSLEY. Edited by SARAH WILLARD HIESTAND. Cloth. Illustrated. Pp. 382.

SCOTT, FORESMAN & CO., CHICAGO

Selected Letters of Pliny. Edited by HUGH MACMASTER KINGERY. Cloth. Pp. 242.

WARWICK & YORK, BALTIMORE

The Outlines of Educational Psychology. An Introduction to the Science of Education. By WILLIAM HENRY PYLE. Cloth. Pp. 247. $1.25.

WASHINGTON GOVERNMENT PRINTING OFFICE

Country Schools for City Boys. By WILLIAM STARR MYERS. Paper. Pp. 22.
Report of the Commissioner of Education for the Year Ended June 30, 1911.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, The University of Chicago

ANDREWS, CHARLTON. The stage and education. Educa. 32:608–13. (Je. '12.)

ANTIN, MARY. First aid to the alien. Outl. 101:481–85. (29 Je. '12.)

BARNES, EARL. The feminizing of culture. Atlan. 109:770–76. (Je. '12.)

BARTON, JAMES W. The combination of the social with the physical work at the University of Toronto. Am. Phys. Educa. R. 17:343–49. (My. '12.)

BASHFORD, HARRY M. Teaching printing in Denver public schools. Print. Art 19:383–84. (Jl. '12.)

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BLAN, LOUIS B. Are we taking proper care of the health of our school children? Pedagog. Sem. 19:220–27. (Je. '12.)

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[1] Abbreviations.—Amer. Phys. Educa. Rev., American Physical Educational Review; Atlan., Atlantic Monthly; Cent., Century; Colum. Univ. Q., Columbia University Quarterly; Educa., Education; Educa. Bi-mo., Educational Bi-monthly; Educa. R., Educational Review; Educa. Rec. (Lond.), Educational Record (London); El. School T., Elementary School Teacher; English J., English Journal; Harp. W., Harper's Weekly; J. of Educa. (Bost.), Journal of Education (Boston); J. of Educa. Psychol., Journal of Educational Psychology; J. of Psycho-Asthenics, Journal of Psycho-Asthenics; Kan. School M., Kansas School Magazine; Kind. R., Kindergarten Review; Lib. J., Library Journal; Lit. D., Literary Digest; Man. Train. M., Manual Training Magazine; Outl., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Sci. Mo., Popular Science Monthly; Print. Art, Printing Art; Psychol. Clinic, Psychological Clinic; Pub. Lib., Public Libraries; R. of Rs., Review of Reviews; School and Home Educa., School and Home Education; School R., School Review; Sci. Am., Scientific American; Sci. Am. Sup., Scientific American Supplement; Teach. Coll. Rec., Teachers College Record; Train. School M. (N.J.), Training School Magazine (New Jersey); Univ. of Chic. M., University of Chicago Magazine.

BRINTON, CHRISTIAN. A master of make-believe. Cent. 84:340–52. (Jl. '12.)

BRUÈRE, MARTHA B. How shall we learn to keep house? Outl. 101:536–41. (6 Jl. '12.)

———. Launching the child. Outl. 101:75–80. (11 My. '12.)

BRUÈRE, ROBERT W. Dilemma of the public school. Harper 125:213–19. (Jl. '12.)

BRYAN, WILLIAM LOWE. Economy in university administration. Science 36:41–45. (12 Jl. '12.)

BUMANN, A. M. Manual training, yesterday and today. Kan. School M. 1:205–12. (My. '12.)

BURNHAM, WM. H. Suggestion in school hygiene. Pedagog. Sem. 19:228–49. (Je. '12.)

BUTLER, NATHANIEL. Report of the twenty-fourth educational conference of the academies and high schools in relations with the University of Chicago. School R. 20:383–400. (Je. '12.)

CALL, ARTHUR DEERIN. Dr. Dawson's inductive study of school children. Psychol. Clinic 6:61–68. (My. '12.)

———. The growth of the moral ideal. Educa. 32:546–59. (My. '12.)

CARSON, JESSIE M. The children's share in a public library. Lib. J. 37:251–56. (My. '12.)

CATTELL, J. MCKEEN. University control. Science 35:797–808. (24 My. '12.)

CHASE, ARTHUR MINTURN. Children of the street. Outl. 101:686–94. (27 Jl. '12.)

CHURCHMAN, PHILIP H. The sliding scale and academic standards. Educa. R. 44:25–34. (Je. '12.)

CLARK, S. H. A new plan for a contest in public speaking. School R. 20:379–82. (Je. '12.)

(The) college not the sheriff. Outl. 101:381–82. (22 Je. '12.)

COLVIN, STEPHEN S. Marks and the marking system as an incentive. Educa. 32:560–72. (My. '12.)

COOK, JOHN W. History of education, XIX. School and Home Educa. 31:373–79. (My. '12.)

COOK, W. A. Shall we teach spelling by rule? J. of Educa. Psychol. 3:316–25. (Je. '12.)

COULTER, JOHN G. The student's appreciation and response as elicited by biology. School and Home Educa. 31:379–85. (My. '12.)

DEARBORN, GEORGE V. N. The sthenic index in education. Pedagog. Sem. 19:166–85. (Je. '12.)

DIMAN, JOHN B. The ideal as an incentive. Educa. 32:573–77. (My. '12.)

EDGERTON, FREDERICK WILLIAM. A recent experiment with magazine literature. English J. 1:278–83. (My. '12.)

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